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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,369	02/12/2002	Joseph M. Probst	04645.1056	5729

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EXAMINER

WILLS, MONIQUE M

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 03/24/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/074,369	PROBST	
	Examiner	Art Unit	
	Wills M Monique	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

The information disclosure statement(s) filed August 30, 2002 and February 12, 2002 has/have been received and complies with the provisions of 37 CFR 1.97, 1.98 and MPEP § 609.

Claim Numbering

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be numbered consecutively.

The claims have been erroneously misnumbered by the omission claim 14. Claims 15-21 have been renumber 14-20 under CFR 1.126

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-8, 10 -17 are rejected under 35 U.S.C. 102(b) as being anticipated by Wackwitz, U.S. Patent 1,044,831.

With respect to claims 1 & 10, Wackwitz teaches a current collector, which comprises: a frame comprising at least one frame conductor providing a closed perimeter (α^1 , α^2 , α^3 and α^4) (col. 1, lines 35-40); a plurality of first radiating conductors (C) radiating from a focal point (b) on the frame and terminating at the frame perimeter spaced from the focal point (b); at least one first concentric conductor (e) extending from and meeting with spaced apart first (α^1) and second frame portions (α) of the frame perimeter and intersecting the plurality of radiating conductors (C), wherein the first concentric conductor (e^1) is concentric with the focal point (b); and at least one second concentric conductor (e^2) extending from and meeting with spaced apart third (α^2) and fourth frame (α^3) portions of the frame perimeter and intersecting the plurality of radiating conductors (C), wherein the second concentric conductor (e^2) is concentric with the focal point (b) and spaced a substantial distance from the first concentric conductor. See Figure 1. With respect to claims 2 & 11, from the focal point (b) to the first concentric conductor (e^1) is x and the substantial distance from the second concentric conductor (e^2) to the first concentric conductor (e^1) is from about 1x to about 10x (Fig. 1). With respect to claims 3 & 15, the current collector contains a plurality of first concentric conductors (e^1) (Fig. 1). With respect to claims 4 & 16, the current collector contains a plurality of second concentric conductors (e^2) (Fig. 1). With respect to claims 5 & 16, the current collector contains a plurality of second radiating conductors (C^2) radiating from the first concentric conductor (d) to second concentric conductor (e^2) and focused at the focal point, and

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the second radiating conductors (C^2) do not radiate from the focal point (Fig. 1). With respect to claims 6 & 17, the focal point (b) resides on a collector tab (4) extending outwardly from the frame (Fig. 3). With respect to claim 7, the frame has a generally rectangular shape (col. 2, lines 60-65) comprised of spaced apart first (α^1) and second (α) frame conductors extending to and meeting with third (α^2) and fourth (α^3) frame conductors. With respect to claim 8, the focal point (b) resides on a collector tab (4) extending from the junction of one of the first and second frame conductors meeting one of the third and fourth frame conductors. See Figure 3. With respect to claim 12, the first concentric conductor (e^1) extends from and meets with at least one spaced apart first and second frame portions of the frame. See Figure 1. With respect to claim 13, the second concentric conductor (e^2) extends from and meets with at least one spaced apart third and fourth frame portions of the frame. See Figure 1. Therefore, the limitations are anticipated by the prior art set forth. The limitation in claim 7, with respect to the first and second frame conductors being longer than the third and fourth frame conductors of the current collector, is considered to be an inherent property of the current collector as set forth in the prior art, because Wackwitz employs a rectangular current collector, and rectangular shapes by definition have two sides that are longer than the other sides.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-6 & 10-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Duddy, U.S. Patent 1,044,831.

With respect to claims 1, 10 & 18, Duddy teaches a current collector, which comprises: a frame comprising at least one frame conductor providing a closed perimeter (α^1 , α^2 , α^3 and α^4) (col. 1, lines 35-40); a plurality of first radiating conductors (C) radiating from a focal point (b) on the frame and terminating at the frame perimeter spaced from the focal point (b); at least one first concentric conductor (e) extending from and meeting with spaced apart first (α^1) and second frame portions (α) of the frame perimeter and intersecting the plurality of radiating conductors (C), wherein the first concentric conductor (e^1) is concentric with the focal point (b); and at least one second concentric conductor (e^2) extending from and meeting with spaced apart third (α^2) and fourth frame (α^3) portions of the frame perimeter and intersecting the plurality of radiating conductors (C), wherein the second concentric conductor (e^2) is concentric with the focal point (b) and spaced a substantial distance from the first concentric conductor. See Figure 1. With respect to claims 2 & 11, from the focal point (b) to the first concentric conductor (e^1) is x and the substantial

distance from the second concentric conductor (e^2) to the first concentric conductor (e^1) is from about 1x to about 10x (Fig. 1). With respect to claims 3 & 14, the current collector contains a plurality of first concentric conductors (e^1) (Fig. 1). With respect to claims 4 & 15, the current collector contains a plurality of second concentric conductors (e^2) (Fig. 1). With respect to claims 5 & 16, the current collector contains a plurality of second radiating conductors (C^2) radiating from the first concentric conductor (d) to the second concentric conductor (e^2) and focused at the focal point, and the second radiating conductors (C^2) do not radiate from the focal point (Fig. 1). With respect to claims 6 & 18, the focal point (b) resides on a collector tab (4) extending outwardly from the frame (Fig. 3). With respect to claim 12, the first concentric conductor (e^1) extends from and meets with at least one spaced apart first and second frame portions of the frame. See Figure 1. With respect to claim 13, the second concentric conductor (e^2) extends from and meets with at least one spaced apart third and fourth frame portions of the frame. See Figure 1. With respect to claim 18, the reference teaches contacting a first electrode active material to at least one of a first and second major side of the first current collector connected to a first terminal to provide a first electrode (col. 7, lines 50-55 & Fig. 3); electrically associating the first electrode with a second counter electrode (col. 8, lines 60-70); wherein each electrode has a terminal (col. 6, lines 50-55) and activating the electrodes with an electrolyte (col. 8, lines 25-30). Therefore, the limitations are anticipated by the prior art set forth.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Duddy, U.S. Patent 3,453,145, as applied to claim 1 above, and further in view of Bhardwaj et al, U.S. Patent 6,566,010.

Duddy teaches a current collector for a lead-acid battery as described hereinabove.

The reference is silent to the current collector being made of conductive material selected from nickel, copper, titanium, cobalt, tantalum, aluminum and stainless steel.

Bhardwaj teaches replacing a significant portion of lead in lead-acid electrodes with lighter weight conductive material, such as aluminum and copper, to increase the energy to weight ratio of the lead plate (col. 2, lines 10-15 & 45-55).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention was made, because even though Duddy does not teach a current collector comprising aluminum or copper,

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Bhardwaj teaches that replacing a significant portion of lead with lighter weight conductive materials, such as aluminum and copper, increases the energy to weight ratio of the lead plate.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19 & 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wackwitz, U.S. Patent 1,044,831, as applied to claim 19 above, and further in view of Muffoletto European Patent 0 532 313.

Wackwitz teaches a current collector comprising a plurality of radio and concentric conductors. With respect to claim 20, the distance from the focal point (b) to the first concentric conductor (e^1) is x and the substantial distance from the second concentric conductor (e^2) to the first concentric conductor (e^1) is from about $1x$ to about $10x$ (Fig. 1).

Wackwitz is silent to providing a second current collector comprising two of the first current collectors in a side-by-side, double wing configuration, with an intermediate tab (claim 19).

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Muffoletto teaches a current collector comprising two first current collectors (54a & 54b) in a side-by-side double wing configuration with an intermediate tab (60). See Figure 1. The reference teaches that by using the twin plate cathode structure, the assembly of the cell is made easier, the alignment of the cathode plates is done automatically and the number of interconnections is reduced, thus simplifying the assembly and welding operations (col. 2, lines 34-43).

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the instant invention was made because even though Wackwitz does not teach a second current collector having a side-by-side double wing configuration with an intermediate tab, Muffoletto teaches that said configuration provides automatic alignment of the cathode plates and reduces the number of interconnections, thus simplifying the assembly and welding operations of the cell.

Conclusions

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

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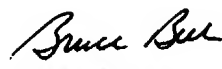
If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Randy Gulakowski, may be reached at 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mw

03/13/04


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